Project Leader's Report

March 2005

USDA Forest Service - Southern Research Station - 320 Green Street Athens GA 30602 - http://www.srs.fs.fed.us/disturbance

DISTURBANCE AND MANAGEMENT OF SOUTHERN ECOSYSTEMS

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Outreach Activities:

• Two organized groups with a total of 42 people visited Brender Forest during the month of March. These groups included Rayonier foresters and logging contractors for a training session on Best Management Practices, which included road layout and construction. The other group was from Maynard Baptist Church in Forsyth, Georgia.

• Approximately 29 visitors came by the office at Brender Forest for information and 79 people signed the register at the Hitchiti Interpretive Trail. Some of these visitors came from as far away as Buffalo, NY.

• Helen Mohr participated in the career fair at Clemson University for the College of Agriculture, Forestry and Life Sciences. Helen and was joined by Shawna Reid, RWU 4201 also located at Clemson. They answered questions and offered guidance on jobs and internship programs with the Forest Service.

Helen's job as a forester can be exciting and rewarding.

Technology Transfer:

• Over 300 researchers and managers gathered in Memphis, Tennessee for the 13th Biennial Southern Silvicultural Research Conference. Staff was instrumental in assuring the success of the conference, including Ken Outcalt (Planning Committee, Poster Session), Pat Outcalt (Website, Abstracts book), and Lynne Breland (Hotel, Logistics, and Registration). Orals presentations included:

- o Comparison of loblolly and slash pine wood properties (R.F. Daniels, D.B. Warnell School of Forest Resources, UGA, Athens, GA, **A. Clark III**, Southern Res. Sta., Athens, GA, and B.D. Shiver, D.B. Warnell School of Forest Resources, UGA, Athens, GA)
- o Effect of rotation age and physiographic region on weight per cubic foot of planted loblolly pine (**A. Clark III**, Southern Res. Sta., Athens, GA, and R.F. Daniels, D.B. Warnell School of Forest Resources, UGA, Athens, GA)
- o Changes in the age structure and the historical disturbance regime of upland yellow pine stands in the southern Appalachian Mountains (P.H. Brose, Northeastern Res. Sta., Irvine, PA, and **T.A. Waldrop**, Southern Res. Sta., Clemson, SC
- o Early dynamics of table mountain pine stands following stand replacement prescribed fires of varying intensity (**T.A. Waldrop & H.H. Mohr**, Southern Res. Sta., Clemson, SC)
- o A simulation study to determine the effectiveness of fire treatments for controlling wildfire behavior in piedmont forests (**H.H. Mohr & T.A. Waldrop**, Southern Res. Sta., Clemson, SC
- o Fuel characterization of the Chauga Ridges Region of the southern Appalachian Mountains (A.D. Stottlemyer & V.B. Shelburne, Dept. of Forest Resources, Clemson Univ., Clemson, SC, **T.A. Waldrop & S. Rideout-Hanzak**, Southern Res. Sta., Clemson, SC, and W.C. Bridges, Dept. of Forest Resources, Clemson Univ., Clemson, SC)

Some of the Clemson group at the BSSRC Conference

- o A comparison of three methods for classifying fuel loading in the southern Appalachian Mountains (**L.A. Brudnak, T.A. Waldrop, & S. Rideout-Hanzak**, Southern Res. Sta., Clemson, SC)
- o Development of a photo guide for fuels in the southern Appalachian Mountains of northeast Georgia and western South Carolina (**S. Rideout-Hanzak, L. Brudnak, & T.A. Waldrop**, Southern Res. Sta., Clemson, SC)
- o Assessment of the FARSITE model for predicting fire behavior in the southern Appalachian mountains (**R.J. Phillips & T.A.**

Waldrop, Southern Res. Sta., Clemson, SC)
o Performance of mixed pine-hardwood stands 15 years after fell and burn treatments (E.M. Blizzard, D.H. Van Lear, & G.G. Wang, Dept. of Forestry & Natural Resources, Clemson Univ., Clemson, SC, and **T.A. Waldrop**, Southern Res. Sta., Clemson, SC)

Poster presentations included:

- o Managing composition of Piedmont forests with prescribed fire (**Outcalt, K.W.**, Southern Res. Sta., Athens, GA)
- o Fertigation of eastern cottonwood (Populus deltoides Bartr.): Biomass and nutrient accumulation after three growing seasons (**Stanturf, J.A. & D. Bland**, Southern Res. Sta., Athens, GA, L. Samuelson, School Forestry & Wildl. Sci., Auburn Univ., AL, and T. Leininger & B. Burke, Southern Res. Sta., Stoneville, MS)
- o The National Fire and Fire Surrogate Study – early results and future challenges (**Waldrop, T.A., R.J. Phillips, & H.H. Mohr**, Southern Res. Sta., Clemson, SC, and V.B. Shelburne, E. Kilpatrick, F. Boyle, & D. Zwart, Dept. of Forestry & Natural Resources, Clemson Univ., Clemson, SC)

• Ken Outcalt participated in the Southeastern workshop "Model Development: Landfire Rapid Assessment Reference Condition Modeling" held in Tallahassee, Florida. He developed a model and description for the pine oak hickory vegetation type of the southeastern coastal plain. This model predicts how fire and other disturbances would interact with species ecology to shape the community composition and relative age distribution across the landscape.

Rick Reitz speaking on Firewise at the WUI conference

• Rick Reitz gave an invited presentation at the conference on "Emerging Issues Along Urban/Rural Interfaces: Linking Science and Society" held in Atlanta. The meeting was sponsored by IUFRO Division 6 and Auburn University. Rick's talk was "Community Advisor."

• Ken Outcalt attended the Coastal Plains Chapter of the Society for Ecological Restoration and the Florida Chapter of The Wildlife Society joint meeting, held at Brooker Creek Preserve near Tampa, Florida. He gave an oral presentation entitled "Fire and Fire Surrogates for Management of Southern Coastal Plain Flatwoods."

• Scott Goodrick met with collaborators Phil Cunningham of Florida State University and Rod Linn of Los Alamos National Laboratory to plan future work on coupled atmosphere fire modeling for the Southeast. One potential study is exploring fire behavior in a pine plantation rather than natural forest fuel conditions. While in Tallahassee, Scott met with the Florida Division of Forestry to discuss a Memorandum of Understanding that will provide near real-time prescribed fire activity data to SHRMC for use in regional scale air quality modeling. This work is in conjunction with a grant from EPA to implement the BlueSky smoke modeling framework in the South.

• Gary Achtemeier, Scott Goodrick and Yong Liu provided expertise and a critical review of the plume modeling methodology currently used by the Western Regional Air Partnership (WRAP) to represent wildfires in their emissions inventory. The several conference calls included representatives from the Forest Service, EPA, NOAA, the National Center for Atmospheric Research, and independent contractors. A major result of the consultation was agreement that WRAP data reporting will include all of the necessary fields for running more detailed plume models such as Daysmoke in the future.

• Yong Liu attended the USDA Symposium on Greenhouse Gases in Agriculture and Forestry: Refining Knowledge and Building Tools, held in Baltimore, Maryland. Yong presented a poster "CO_2 Emissions from Wildfires in the U.S.: Present Status and Future Trends" co-authored by Yong, John Stanturf, Hanqin Tian (Auburn University), and John Qu (George Mason University).

• Tom Waldrop presented a tour for the national University Forest Managers Group, which meets every 18 months at a school forest to learn about ongoing research and management issues. This year's meeting was attended by managers from many eastern and western states and two managers from Canada. Tom presented results from the Piedmont site of the National Fire and Fire Surrogate Study on the Clemson University Forest. He also described research in using hyperspectral imaging for classifying Appalachian forest fuels and management options to restore areas impacted by southern pine beetle. The group was very interested in the relationship between the school forest and the Southern Research Station. Tom emphasized the long-term cooperation between the Station and Clemson University and the mutual benefits obtained by both organizations.

• Ken Outcalt presented information on the long-term burning plots at Tiger Corners on the Francis Marion National Forest to the Southern Research Station Management Team on the field trip portion of their semi-annual meeting.

• Gary Achtemeier and cooperators from the University of Massachusetts used their 3 mm Doppler radar to take measurements of the distribution, smoke mass, and turbulence within smoke plumes during prescribed burns at the Savannah River Site near Aiken, SC. They successfully measured smoke from two prescribed burns. Although this is basic research and measurements of this sort have never before been taken, we hope that radar will become a useful tool for measuring the vertical distribution of smoke particles in plumes and play a critical role in validating local and regional air quality models. Preliminary results from this radar experiment will be available this summer.

• Joe O'Brien visited Honduras with Ron Myers, Senior Fire Ecologist, and Steve Morrison, Tiger Creek Preserve Manager, The Nature Conservancy. The twofold purposes of the trip were to discuss fire management with officials from Honduran land management agencies and conservation NGOs, and to assess fire management and fire research needs of the Rio Platano Biosphere Reserve. The Reserve is located in the La Mosquitia region, which occupies the Caribbean coastal plain of Honduras and Nicaragua. Ecosystems found in the area range from fire dependent grasslands, Caribbean pine savannas, palm savannas, lagoons and swamps and fire-sensitive tropical rainforests. The reserve is home to several indigenous groups and a portion is dedicated to maintaining the traditional subsistence lifestyles of these groups. This part of the reserve is also where most of the fire-dependent ecosystems occur and all the indigenous groups use fire to prepare garden plots and manage the wider landscape. The Miskito people are the largest indigenous group in the area; in several interviews with them, they cited improving grass fodder, easing travel, facilitating logging, improving wildlife habitat, and the reduction of tick and chigger populations as reasons they burned the pine forests. Fire

Technology Transfer:

frequency appeared to be in the 1-3 year range for forests and annually for grasslands. Although there is some concern that burning was too frequent and inhibiting pine regeneration, especially close to villages, this was difficult to determine in such a short trip. Overall, fire danger was low except in areas around military bases where soldiers suppress all fires. Joe hopes to return to this region, in concert with Forest Service International Programs, to develop community-based monitoring and education projects.

Meetings/Reports:

• John Stanturf attended the Management Team Meeting in Charleston, SC. It was noted that this year is the 10th anniversary of the Southern Research Station, which combined the Southeastern and Southern Forest and Range Experiment Stations. The 100th anniversary of Forest Service Research is coming up in 2007. Main topics included the FY 2006 President's Budget, which results in a 3.7% decrease to the SRS in non-Forest Inventory funding (FIA received a $2.6 million increase). The Summer issue of Compass in the redesigned format has been a big hit, although one consistent criticism is that the level of understandability in the lead article is not carried over into the abstracts of new publications (which will probably result in a requirement that scientists produce a non-technical abstract for each publication). Future issues will feature research on longleaf pine and fragmentation (contact Zoë Hoyle). The SRS will assume full responsibility for the Forest Service Science Award program for outstanding university seniors; responsibility was formerly shared with Region 8 (contact Jim Perdue). Ron Hooper, Washington Office, provided a view from on high of the changing world of business

Meetings/Reports:

operations. One change from what we've heard before was that scientist panels for grades GS-13 and below likely will remain at the station level, rather than consolidated at the Albuquerque Service Center. Another move forward is formation of a group to develop mechanisms whereby we can use electronic signatures for such things as personnel selections. Dave Wear and Carl Trettin are on a customer focus team representing R&D interests.

• John Stanturf attended a brainstorming session in Blacksburg, Virginia for a regional assessment of aquatic condition. Also attending from Athens was Kevin Leftwich, Region 8 Aquatic Ecologist. Other participants included Andy Dolloff, Project Leader of SRS-4202 (Coldwater Streams and Trout Habitat, Blacksburg), Mel Warren, Research Fisheries Biologist, SRS-4155 (Center for Bottomland Hardwoods Research, Oxford, Mississippi) and Alan Clingenpeel, Forest Hydrologist, Ouachita National Forest (Hot Springs, Arkansas). A follow-up meeting was held by Dolloff and Stanturf with Steve McNulty, Project Leader SRS-4852 (Southern Global Change Program, Raleigh, North Carolina) and Dave Wear, Project Leader SRS-4851 (Economics of Forest Resources, RTP, North Carolina) at the Management Team meeting in Charleston. The group will meet again in Raleigh May 18-19 to finalize the approach to the first phase of the study, a risk map for southern fish species.

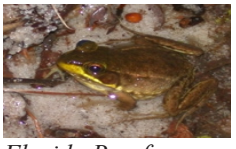
• Mac Callaham and John Stanturf attended a meeting of scientists interested in the Sharkey Restoration Site, organized by Emile Gardiner, SRS-4155 (Stoneville). Others attending included Paul Hamel (SRS-4155), Jim Shepard (Mississippi State University), and Eric Vance (NCASI). The group discussed the direction of research at the Sharkey bottomland hardwood restoration demonstration site, including measurements that need to be made before the cottonwood nurse crop is harvested this summer.

From the Cover (Masthead) - Some of the endangered reptiles in Florida

American Alligator
Alligator mississippiensis

Eastern Indigo Snake
Drymarchon corais

Flatwoods Salamander
Ambystima cingulatum



Florida Bog frog
Rena okaloosae

Florida Brown Snake
Storeria dekayi victa

Pine Barrens Treefrog
Hyla andersonii

Florida Ribbon Snake
Thamnophis sirtalis

Gropher Frog
Rana capito

Green Anole
Anolis carolinensis

Suwannee Cooter
Pseudemys concinna suwanniensis

Gopher Tortoise
Gopherus polyphemus

Working hard! Bruce Jewell, AD-Pines and Jim Shepard, new Forestry Department head at Mississippi State University, at the BSSRC.

"I frequently tramped eight or ten miles through the deepest snow to keep an appointment with a beech tree,or a yellow-birch, or an old acquaintance among the pines."

—Henry David Thoreau, 1817 - 1862

Meetings/Reports:

• Pat Outcalt and John Stanturf met with Michelle Estes and Sharita Love of the Office of Instructional Support and Development University of Georgia. They discussed cooperation on instructional technology projects, including hosting student interns, use of their video conferencing facility, and video production facilities. Michelle provided copies of EMMA, software for on-line authoring under development at UGA and based on open-source software.

• The 14th Biennial Southern Silvicultural Research Conference will be held in Charleston or Savannah, in February or March 2007. Once again, program chair duties fall to a scientist in the unit, John Stanturf. Past chairs in the unit include Ken Outcalt, Tom Waldrop, and Boyd Edwards.

• Wayne Clatterbuck, University of Tennessee, announced that next year, in February or March 2006, the Central Hardwood Forest Conference will be held in Knoxville,

Partnerships:

• Mac Callaham has initiated collaborative research with Dan Marion, Research Hydrologist in Hot Springs with SRS-4106, on the Pine/Bluestem restoration plots on the Ouachita National Forest in Arkansas.

• Mac Callaham has been invited to serve on the advisory committee for Carol Flaute, graduate student at the University of Georgia. Carol is planning ecotoxicological work at the Savannah River Site in South Carolina as her master's thesis research. She is specifically interested in tracing heavy metals and radiological contamination from soil and sediments through invertebrates into terrestrial food webs in and around impacted streams at the site.

• Mac Callaham agreed to collaborate with David Walters, aquatic ecologist with EPA, on the effects of forest management on soils in and around intermittent and ephemeral stream beds, sensitive habitats at the interface between terrestrial and aquatic systems and processes.

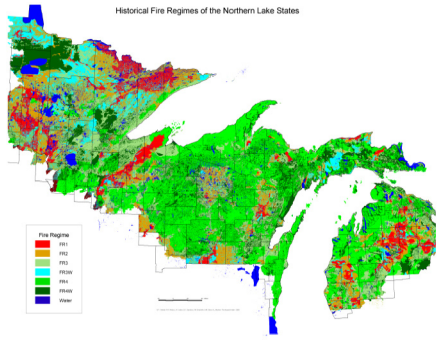
• Greg Stella of Alpine Geophysics, the main modeling contractor for VISTAS and Gary Achtemeier will propose that VISTAS fund an effort to provide smoke mass profiles derived from Daysmoke for "2nd level inventory" prescribed fire data that VISTAS has in hand. The

Partnerships:

position of VISTAS is they want Daysmoke to be the preferred smoke model for placement of smoke into CMAQ, the EPA regional air quality model

Science Highlight:

Science Highlights this month focuses on two delivered products, Fire Risk Maps in the Lake States and the Encyclopedia of Southern Fire Science.



Dave Cleland and his research team have been assembling and analyzing data necessary for assessing fire risk and fire regime condition class (FRCC) across the Lake States, and are now extending this effort to National Forests in Ohio, Indiana, Illinois, and Missouri. Dave is a Research Ecologist with the unit (SRS-4104) and a Landscape Ecologist with the Eastern Regional Office (R-9) of the National Forest System. The research component of this project was funded by Joint Fire Science Program and National Fire Plan awards, and administrative studies funded for NFS land by R-9 Fire and Aviation.

The team has delivered maps and database products of attributes across 60 million acres to National Forests and State Departments of Natural Resources. The products include maps of fire risk, historical fire regimes, landscape ecosystems (LTAs) mapped by interagency teams, and biophysical units (ELTs). The team uses these mapped LTA and ELT units in spatial analysis at multiple scales of departures from reference conditions of vegetation communities and disturbance regimes to determine fire regime condition class. Historical forest conditions, based on observations made in the 1825-1870 General Land Office Survey, were used as baselines in FRCC calculations, and to develop desired future conditions at the landscape-level and stand-level. This allows the design of fuel treatment projects that will effectively reduce fire risk and lower FRCC.

Science Highlight:

Maps are also being used in assessing fire risk, an effort complementing FRCC mapping. Fire risk is assessed by integrating maps of current vegetation (classified by state resource agencies and the US Geological Survey from LANDSAT TM imagery) with information on ignition probabilities, anticipated fire behavior, and maps of biophysical units. The biophysical unit is useful for characterizing lesser fuels affecting modern surface fire regimes, and as a predictive variable in numerical models of modern forest fire occurrence.

Maps of upland and lowland conifer landscape structure have also been produced. These maps are used to estimate: (a) crown-fire potential with no fire spotting; (b) fire spotting and rolling vortices within 1/4 mile; and (c) fire spotting of 1 mile. The team has combined maps of the wildland-urban interface, developed for national application by Volker Radeloff and Roger Hammer at the University of Wisconsin-Madison, with fire risk maps to assist managers in systematically setting fuel treatment priorities and in implementing the Healthy Forest Restoration Act. The WUI map was developed within National Forest System lands using housing density data that includes small groups of homes with infrastructure, including summer recreational homes, which would not be captured in census data of population density. Cleland would like to extend this work to the Southern Region, in cooperation with staff from SRS-4104 and other research work units.

Although much information is available on fire and forest management, often it is not readily available or in an accessible format. The Encyclopedia of Southern Fire Science (ESFS) seeks to overcome these problems by organizing and synthesizing the wildland fire science literature and translating it into an Internet-based encyclopedia. The aim of the ESFS is to organize and remove redundancy from existing sources of fire-related information and present this knowledge in a user-friendly format. Currently,

Science Highlight:

ESFS has over 550 pages of peer-reviewed text, tables, and figures on the following topics: fuels of southern wildland; fire weather; fire behavior; fire effects on water, soil, plants, and animals; fire ecology and management of 20 fire-adapted southeastern communities; human health impacts of fire; history of people and fire in the South; fire in the wildland-urban interface; fire effects on cultural resources; fire education programs; and uses and methods of prescribed burning. These topics are available to the public in a fully linked and searchable encyclopedia hypertext system via the Internet making access to this information universal, convenient, and free (http://www.forestryencyclopedia.net/).

Using ESFS busy forest managers can more easily find answers to problems from their own desks. ESFS provides easy-to-find answers to management questions such as:

- What season and fire intensity is best to restore longleaf pine?
- How can I minimize the effects of a burn on soil and water quality?
- What common landscape plants are the most flammable in Florida?
- What fire education programs are available to residents of South Carolina?
- How does fire affect pollinators?
- How can prescribed fire be used to restore Florida scrub or dry prairies?
- How can I reduce fuel loads if I live near an urban area?
- What are some common methods of measuring burn severity?

In addition to the primary beneficiaries of ESFS (land and fire managers), ESFS will serve the information needs of landowners, policy makers, the media, educators, students, researchers, technology transfer agents, fire workers, and homeowners. Ready access to the right information in the right form using the encyclopedia will help members of all these groups to make more informed decisions by deepening their understanding of the environmental, social, economic, and political implications of fire, fuels, and recovery strategies. Under the direction of Editors Deborah Kennard and Cynthia Fowler, the ESFS is a cooperative effort between SRS-4104, the Southern Research Station, and more than 10 research institutions and land management agencies across the South. Over 35 authors have contributed literature syntheses to the effort and over 40 experts have provided peer-review of these submitted syntheses.

Funding:

• Funding from EPA to integrate the BlueSky/RAINS air quality modeling platform into the Southern high Resolution Modeling Consortium toolbox has been finalized; the Smoke Management Team will have available $55,000 this fiscal year.

Visitors

• Visitors scheduled to visit the unit in April include a group of three Chinese forest administrators who are in an exchange program with International Paper, host John Stanturf; Prof. Yi from the Chinese Academy of Forestry in Beijing, hosts Yongqiang Liu and John Stanturf; and visiting scientist, Matt Whiles of Southern Illinois University, host Mac Callaham.

Personnel News:

Mac Callaham receiving the Early Career Scientist Award from Director Pete Roussopoulos (Photo: Ted Leininger)

• Mac Callaham received the Director's Early Career Scientist Award from Pete Roussopoulos, Director of the Southern Research Station at the Management Team Meeting in Charleston.

• Lynne Breland, Technical Editor remotely located in Natchez, Mississippi, has accepted a permanent position with the unit and became a grandmother (number 2). Congratulations, Lynne.

• Grant Harvey, forestry has joined the unit as a student working with Alex Clark. Welcome!

• Corey Babb, Chemist, attended a Maintenance Course on the ICP (Inductively-Coupled Plasma Spectrophotometer). Topics included flame atomic absorption, graphite furnace methodology, ICP maintenance and ICP spectral, chemical, and physical interferences. The one-day course included a tour of laboratory facilities and new instruments. Cures for our Soil Quality Lab's potassium chloride extractions of aluminum were discovered during this course.

Personnel News:

• Corey also attended an OSHA OTI 6000 Collateral Duty Course at GA Tech's Global Learning Center. This week-long course covered federal regulations on safety and health in the workplace. The course included a field trip to the Institute of Paper Technology where a simulated safety inspection was conducted. Corey learned of several alternatives to the current safety program that we should consider

• Robert Gordon, forestry technician, resigned to take a job with F&W Forestry in Albany, Ga. Robert has worked for Alex Clark for five years while obtaining a BS and MS from UGA. Best wishes, Robert!

News from Around the Region:

• The Southern Group of State Foresters support team will expand in May with the addition of Dave Fredrick as the Southern Fire Representative. Fredrick is currently Fire Chief for Alabama. He joins Mike Zupko, executive manager (sgsfexec@mindspring.com), John Greis, forest resource and issues specialist (jgreis@fs.fed.us), Mike Countess, policy analyst (mike.countess@state.tn.us), Clara Johnson, communications specialist (cjjohnson01@fs.fed.us), and Fred Allen, SRS/SGSF liaison (derfallen@netcommander.com).

• Is Athens, Georgia the smartest city in the South? Or simply the best-educated? According to the U.S. Census Bureau, Athens ranks fourth in the country among cities larger than 100,000 in population that also have the highest percentage of the population older than 25 years who have doctoral degrees. With 3,015 Ph.D.s, 5.8% of Athenians 25 and older are highly educated, surpassed only by Cambridge, MA (9.6%), Ann Arbor, MI (9.3%), and Berkeley, CA (8.1%). The closest rivals in the South are Durham, NC (4.1%) and Tallahassee, FL (3.8%).

• Wilbur H. Duncan, Emeritus Professor of Botany at the University of Georgia, died on March 25. Southern botanists know well the field guides of Duncan, many co-authored with his wife Marion, including *Wildflowers of the Southeastern United States* and *Trees of the Southeastern United States.*

• i-cubed, a geospatial engineering company in Fort Collins, Colorado, has won a contract from the Forest Service to implement the

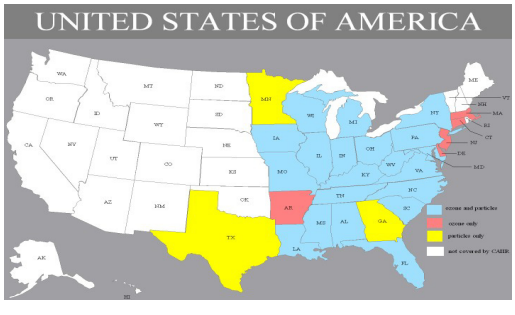
DataDoors(TM) software system at the FS Geospatial Service and Technology Center (GSTC) in Salt Lake City. DataDoors will serve as the raster data provisioning engine inside the FS Geodata Clearinghouse. DataDoors will allow users to quickly search the Forest Service archive of raster maps and images on the Clearinghouse web site and download the selected files directly into their image processing or GIS software system. DataDoors enables the user to search via ArcMapTM or web browser for any type of geospatial data in local or remote databases. Once suitable data have been selected, DataDoors applies standard (or customized) image processing algorithms on the fly and delivers a tailored data set to the end user's desktop application. The FS Geodata Clearinghouse provides government personnel and the public with the online ability to search, view and download metadata and geospatial data sets pertaining to lands of the National Forest System. After DataDoors implementation, data sets will include digital raster maps, digital orthophotos and other imagery. The clearinghouse is registered with the Geospatial One-Stop, is a node on the Federal Geographic Data Committee Clearinghouse Network, and serves data to U.S. Geological Survey's National Map. The clearinghouse may be accessed at http://fsgeodata.fs.fed.us. (Source: BusinessWire)

• New Scientist reports the availability of a device to torment the TV remote-hog in your home. A gadget the size of a cell phone, selling for $15, can be trained to randomly change channels every few minutes "allegedly leaving your resident control freak apoplectic with rage." Unfortunately, you have to subscribe to the magazine to learn more details (such as how to order).

• FAO has released the updated State of the World's Forests 2005 with the theme "realizing the economic benefits from forests." The report includes main contributions on enhancing the economic benefits from forests, economic benefits from agroforestry, the economics of wood energy, impacts of tariffs and non-tariff measures on forest products trade, and violent conflicts in forested areas. The 2005 edition also provides an update on issues related to forest resources, forest conservation and management, institutions and the international forest policy dialogue. The report can be found at http://www.fao.org/forestry/site/21407/en

• Forbes.com reports that the digital-paper market is the fastest growing sector of the paper industry. Ninety percent of business printing is now digital (i.e., derived from a computer file and transferred to paper via toner, rather than with traditional lithography's ink and oil processes). Digital photography is driving this trend on the consumer side. High-speed color laser printing is expected to increase 40% over the next three years. The opportunity exists for the paper industry to develop strong branding identity, as opposed to the commodity nature of most paper products. Research and development has grown, aiming for an inexpensive all-purpose paper (coated digital photo paper, for instance, costs over one dollar per sheet). (Source: BusinessWire)

• The Ministry of Agriculture and Forestry of Finland, in co-operation with the European Forest Institute and with financial support from the Ministry of the Environment of Finland organized an Expert Workshop on Forest Landscape Restoration in the Central and Northern European Region. The workshop took place in Hämeenlinna, Finland on 6–8 October 2004. These proceedings (No 53. Forest Landscape Restoration in Central and Northern Europe, Taina Veltheim and Brita Pajari editors) compile the papers and presentations from the workshop and can be downloaded from the European Forestry Institute website: http://www.efi.fi/publications/proceedings



• On 15 March, the EPA issued new pollution control regulations, requiring 28 eastern states and the District of Columbia to comply with stringent air quality standards. The new Clean Air Interstate Rule seeks to cap the emission of sulfur dioxide and nitrogen oxides to help more than 450 counties where federal standards for air quality are not being met. CAIR covers 23 states and the District of Columbia which, according to EPA, contribute sulfur dioxide and nitrogen oxides emissions resulting in unhealthy levels of fine particles in downwind states. Also, CAIR covers 25 eastern states and the District of Columbia that EPA found to contribute nitrogen oxides emissions to unhealthy levels of ozone in other downwind states. When fully implemented in 2015, CAIR would reduce sulfur dioxide emissions by more than 70% and nitrogen oxides emissions by more than 60% from 2003 levels. EPA estimates that resulting health benefits would annually prevent 17,000 premature deaths, millions of lost work and school days, and tens of thousands of nonfatal heart attacks and hospital admissions. However, EPA also estimates that a number of metropolitan areas in the eastern U.S. will not attain federal air quality standards for ozone or fine particulate matter after 2015. The rule allows states to reach regulatory limits by participating in cap and trade programs, like the Clean Air Act's Acid Rain program, or by implementing other measures. A closely related action is the EPA Clean Air Mercury Rule, the first federally mandated requirements that coal-fired electric utilities reduce their emissions of mercury. EPA chose to use a cap and trade program to achieve mercury emissions reductions instead requiring power plants to install controls known as "maximum achievable control technology" by Section 112 of the Clean Air Act. http://www.epa.gov/cair/where.html

• This year's World Water Day kicked off a campaign by the United Nations to draw attention to issues of water, poverty and sustainable development around the world. The "Water for Life Decade," from 2005 to 2015, aims to make progress in solving many problems that are linked to lack of clean water -- such as poverty, hunger, pollution and disease. The National Academies has created a new Web site that provides free access to more than 100 Academies reports on water-related issues. The Water Information Center aims to assist the work of water scientists, engineers, managers, policy-makers and students in the developing world. (Source: ASA/CSA/SSSA Science Policy Report) www.nationalacademies.org/headlines/#sh0322

• Also this month, The White House Subcommittee on Water Availability and Quality of the Committee on Environment and Natural Resources, National Science and Technology Council announced the release of its first report, Science and Technology to Support Fresh Water Availability in the U.S. The report addresses

the key question, "Does the U.S. have enough water?" The brief answer is, "We don't know." According to the U.S. General Accounting Office (2003), national water availability and use has not been comprehensively assessed in 25 years. The report takes a brief look at what is known about our nation's fresh water supply, what we don't know about it, and the ramifications of our current state of knowledge. It also describes high-priority science and technology efforts needed to provide adequate information for decision makers and water managers. At the request of the Office of Science and Technology Policy, as a follow-up to this report, the Subcommittee is now developing a strategic plan for Federal science and technology research and development to support freshwater availability and quality. As this plan takes shape there will be an opportunity for public review and input. The report is available at: www.ostp.gov/NSTC/html/swaqreport_2-1-05.pdf

• The USDA provided the U.S. Department of Energy with new accounting rules and guidelines for reporting greenhouse gas emissions and carbon sequestration in the forest and agriculture sectors. The revised voluntary reporting program provides agriculture and forest landowners with the ability to quantify and maintain records of actions that have greenhouse gas reduction benefits. These actions include using no-till agriculture, installing a waste digester, improving nutrient management, and managing forestland. The program also provides opportunities for agriculture and forestry to partner with industry in developing actions to reduce greenhouse gases. The guidelines offer farmers and ranchers a new online tool to provide a simple and reliable method for estimating soil carbon sequestration. The guidelines will be published in the Federal Register for a 60-day public comment period and are expected to become effective 180 days from publication. http://www.usda.gov/oce/gcpo/greenhousegasreporting.htm#guidelines

• Climatewire is a recently launched news portal dedicated to climate change. The site is updated every morning with links to climate change articles from English language media world wide. Website: http://www.climatewire.org/

Tom Waldrop and Dave Van Lear at the Silviculture conference. Dave has announced he's really, really retiring this year. When Tom as moderator introduced Dave as speaker, Tom recounted how Dave was instrumental in Tom's selection of a forestry undergraduate major at Clemson

The 13th Biennial Southern Silvicultural Research Conference held in Memphis, Tennessee was well attended.

Publications

FY 2005 Publications: (*denotes new publication this month)

Refereed Journals and Book Chapters

Achtemeier, Gary L. 2005. Planned Burn-Piedmont. A local operational numerical meteorological model for tracking smoke on the ground at night: model development and sensitivity tests. *International Journal of Wildland Fire* 14: 85-98.

Baumhauer, Madsen, P., **Stanturf, J.A**. 2005. Regeneration by direct seeding—a way to reduce costs of conversion. Chapter 22 in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 349-354.

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Cunningham, P., **Goodrick, S**., Hussaini, M.Y., Linn, R. 2005, Coherent vortical structures in numerical simulations of buoyant plumes from wildland fires. *International Journal of Wildland Fire* 14: 61-75

Gardiner, Emile S., **Stanturf, John A**., Schweitzer, Callie J. 2004. An afforestation system for restoring bottomland hardwood forests: biomass accumulation of Nuttall oak seedlings interplanted beneath eastern cottonwood. *Restoration Ecology* 12(4): 525-532.

Haight, Robert G., **Cleland, David T**., Hammer, Roger B., Radeloff, Volker C., Rupp, T. Scott. 2004. Assessing fire risk in the wildland-urban interface. *Journal of Forestry* 102(7): 41-48.

Hoadley, Jeanne L., Westrick, Ken, Ferguson, Sue A., **Goodrick, Scott L**., Bradshaw, Larry, Werth, Paul. 2004. The effect of model resolution in predicting meteorological parameters used in fire danger rating. *J. Applied Meteorology*, 43(10): 1333-1347.

*Jones, P.D., Schimleck, L.R., Peter, G.F., Daniels, R.F., **Clark, A. III**. 2005. Nondestructive estimation of *Pinus taeda* L. wood properties for samples from a wide range of sites in Georgia. *Canadian J. Forest Research* 35: 85-92

Kennard, D. K. 2004. Commercial tree regeneration 6 years after high-intensity burns in a seasonally dry forest in Bolivia. *Canadian Journal of Forest Research* 34(11): 2199-2207.

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* **Kennard, D.K., Outcalt, K.W., Jones, D., and O'Brien, J.J**. 2005. Comparing techniques for estimating flame temperature of prescribed fires. *Fire Ecology* 1 (1): 75-93.

Long, Alan J., **Wade, Dale D**., Beall, Frank C. 2004. Managing for fire in the interface: Challenges and opportunities. Chapter 13 *in* Vince, Susan W., Duryea, Mary L., Macie, Edward A., Hermansen, L. Annie, eds., *Forests at the Wildland-Urban Interface*. CRC Press, Boca Raton. P. 201-223.

Paladino, J.C.L., Guapyassú, M.S., Platais, G.H. 2005. Restoration practices in Brazil's Atlantic rainforest. Chapter 27 in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 5409-422.

Stanturf, J.A. 2005. What is forest restoration? Chapter 1 in Stanturf, J.A. and Madsen, P., eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 3-11.

Stanturf, J.A., Conner, W.H., Gardiner, E.S., Schweitzer, C.J., and Ezell, A.W. 2004. Recognizing and overcoming difficult site conditions for afforestation of bottomland hardwoods. *Ecological Restoration* 22(3): 183-193. (Counted in last year).

Stanturf, J.A. and Madsen, P. 2005. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. 569 pp.

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Van Lear, D.H. and Wurtz, T.L. 2005. Cultural practices for restoring and maintaining ecosystem function. Chapter 11 *in* Stanturf, J.A. and Madsen, P., eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 173-192.

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***Callaham, M.A. Jr.** 2005. Soil biology and fire in southern ecosystems. Encyclopedia of Southern Fire Science, http://www.forestencyclopedia.net USDA Forest Service, Southern Research Station.

Clark, Alexander III and Daniels, Richard F. 2004. Wood quality of slash pine and its effect on lumber, paper, and other products. In Dickens, E.D., Barnett, J.P., Hubbard, W.G. and Jokela, E.J. eds., Slash Pine: Still Growing and Growing! Proceedings of the Slash Pine Symposium held April 23–25, 2002, Jekyll Island, Georgia. USDA Forest Service Southern Research Station; General Technical Report SRS-76, Asheville, NC; pp. 61-65.

***DiCosty, R. J.** 2005. Fire effects on soil organic matter. Encyclopedia of Southern Fire Science, http://www.forestencyclopedia.net USDA Forest Service, Southern Research Station.

Fowler, C. 2004. *Fire education programs in the Southern United States.* Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

Fowler, C. 2004. *Human health and forest fires in the Southern United States*. Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

Fowler, C. 2004. *Effects of Fire on cultural resources in the Southern United State*s. Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

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Outcalt, Kenneth W. 2004. Longleaf pine restoration the Hitchiti Experimental Forest. The Southern Restorationist 4(2): 4. (Summer/Fall 2004 issue of the Newsletter of the Coastal Plain Chapter, Society for Ecological Restoration; http://ser-coastalplains.org/pdfdoc/Summ%20Fall%2004.pdf)

Publications

Reitz, Richard D. and Geissler, George L. 2003. Community advisor—Firewise. In Proc. Society of American Foresters National Convention, 25-29 October 2003, Buffalo, NY. P. 63-72.

Stanturf, J.A., Gardiner, E.S., Conner, W., Outcalt, K., Guldin, J. 2004. Restoration of southern forest ecosystems. In Rauscher, H.M., Johnsen, K., eds. Southern Forest Science: Past, Present, Future. USDA Forest Service Southern Research Station, Asheville, NC; General Technical Report SRS-75; pp. 123-131.

Zhang, Yangjian. 2004. Identification of the wildland-urban interface at regional and landscape scales. Ph.D. dissertation, University of Georgia; 116 pg. (Performed under cooperative research agreement # SRS-02-CA-11330136-182, Wimberly and Stanturf).

Abstracts and Posters

DiCosty, R., Kelley, S., Rials, T., **Stanturf, J.A.** 2004. Soil black carbon levels and soil organic matter quality under interval prescribed burning in the southeastern United States. Eurosoil 2004, 4-12 September, Freiburg, Germany [Poster]

DiCosty, Ralph and Stanturf, John. 2004. Fifty years of prescribed burning: effects on soil organic matter composition and podzolization in a Spodosol soil profile in the Southeastern United States. Soil Science Society America Annual Meeting Abstracts.

Gardiner, Emile S., **Stanturf, John A**., Hamel, Paul B., and Leininger, Theodor D. 2004. Early stand development, carbon sequestration, and wildlife use under conventional versus intensive afforestation practices in the Lower Mississippi Alluvial Valley. 22nd Session International Poplar Commission, The Contribution of poplars and willows to sustainable forestry and rural development, Santiago, Chile 29 Nov-2 Dec 2004; p. 96 [Abstract]

Goodrick, Scott, Liu, Yongqiang, and Stanturf, John. 2004. Spatial modeling of drought using artificial neural networks. In Impacts of the Drought and Heat in 2003 on Forests, Berichte Freiburger Forstliche Forschung, Heft 57: 18.

Liu, Y., G. Achtemeier, and S. Goodrick. 2004. Air quality effects of prescribed fires simulated with CMAQ. The Third Models-3 Workshop, Chapel Hill, NC, 18-20 Oct 2004. (Extended abstract, paper 6.5, pp 1-4, available from http://www.cmascenter.org/html/2004_workshop/abstracts_presentations.html.

Liu, Yongqiang, Stanturf, John, and Goodrick, Scott. 2004. Modeling ecosystem water stress and fire risk under drought conditions. In Impacts of the Drought and Heat in 2003 on Forests, Berichte *Freiburger Forstliche Forschung*, Heft 57: 56.

***Liu, Y., Stanturf, J.A.,** Tian, H., and Qu, J. 2005, CO2 emissions from wildfires in theU.S.: Present status and future trends. In abstracts of the Third USDA Symposium on Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry, Baltimore, MD, March 21-24, 2005, P.162

Stanturf, Bland, Samuelson, Leininger, Burke. 2004. Three-year growth response of four clones of eastern cottonwood (*Populus deltoides* Bartr. ex Marsh.) to fertigation. 22nd Session International Poplar Commission, The Contribution of poplars and willows to sustainable forestry and rural development, Santiago, Chile 29 Nov-2 Dec 2004; p. 118 [Abstract]

Stanturf, Bland, Samuelson, Leininger, Burke. 2004. Three-year growth response of four clones of eastern cottonwood (*Populus deltoides* Bartr. ex Marsh.) to fertigation. Biomass and bioenergy production for economic and environmental benefits, Short Rotation Woody Crops Operations Working Group Biennial Meeting, Charleston, SC November 2004; p. 59 [Abstract]

***Wade, D**., Brenner, J., Anderson, J., Graham, H., Goodrick, S., Gorden, R., Hebb, M., Kern, J., Kuypers, M., Miller, S., Mousel, K., Proctor, T., and Voltolina, D. 2004. Some considerations when prescribed burning at the Wildland-Urban Interface. Tall Timbers Fire Ecology Conference Proceedings 22:318 [Abstract]

Upcoming Events:

2005

Apr 13-14	Plum Creek Symposium on Kyoto, Forests, and Living Tree Markets: Science and Land Use Policy In Carbon Sequestration; Missoula, Montana, http://www.forestry.umt.edu/kiosk/Conference/Carbon/default.htm
Apr 19-21	Resource Management Tools & Geospatial Conference, "Envisioning Information," Phoenix, Arizona (with short courses on April 18 & 22)
Apr 24-29	Symposium Analysis and Characterization of Black Carbon in the Environment, to be held during the European Geosciences Union General Assembly, Vienna, Austria; DiCosty to attend and present poster http://www.cosis.net/members/meetings/sessions/information.php?p_id=132&s_id=2304&PHPSESSID=9d31fbbe1e858d5f6e74a6a8e3db092c
Apr 25-27	Biennial Georgia Water Resources Conference, Athens; http://ga.water.usgs.gov/gwrc/callforpapers.html
Apr 26-29	IUFRO conference on Biodiversity and Conservation Biology in Plantation Forests to be held in Bordeaux, France; http://www.pierroton.inra.fr/IEFC/manifestations/IUFROD82005.html
Apr 27-29	Atmospheric Science and Air Quality Conference, San Francisco, CA. Achtemeier to attend and present paper
*Apr 28-29	Southeastern Hardwood Forestry Group Meeting, Scottsboro, Alabama; contact peggyanderson@fs.fed.us
May 11-13	Conference on Remote Sensing and Fire, to be held at George Mason University in Fairfax, VA.
May 11-13	International Conference on Transfer of Forest Science Knowl edge and Technology Transfer, Troutdale, OR; http://www.fs.fed.us/pnw/calendar/tech-transfer/index.shtml
*May 22-25	Soil Ecology Society Meetings at the Argonne National Laboratory in Illinois. Callaham to attend and present.
May 23-24	Fire in Southern Appalachians Workshop, Coweeta Hydrologic Lab; Tom Waldrop invited speaker
Jun 6-10	National Silviculture Workshop, "Restoring fire-adapted forested ecosystems" Granlibakken Conference Center in Tahoe City, California
Jun 12-16	5th North American Forest Ecology Workshop, Aylmer, Quebec, Canada; http://www.unites.uqam.ca/gref/nafew2005/
Jun 20-24	5th International Conference on Forest Vegetation Management, IUFRO Research Group 1.13.00 Forest Vegetation Management. Corvallis, Oregon, USA. http://outreach.cof.orst.edu/icfvm/index.htm
*Jun 19-22	59th Annual International Convention, Forest Products Society, Quebec City, Canada; Alex Clark to attend and present paper http://www.forestprod.org/confam05.html
Jun 20-23	Southern Forest Tree Improvement Conference (SFTIC), Sheraton Capital Center, Raleigh, North Carolina; http://www.ncsu.edu/feop/sftic /

Upcoming Events:

Jul 17 – 20 American Society Agricultural Engineers (ASAE) annual meeting, Tampa, Florida; session on Forest Engineering Contributions to Biomass Collection and Transport organized by Bryce Stokes, Email: bstokes@fs.fed.us

Jul 18-22 AFFORNORD, Conference on Effects of Afforestation on Ecosystems, Landscape & Rural Development, Reykholt, Ice land; http://www.skogur.is

*Jul 26-28 IUFRO Conference "The Thin Green Line," a symposium on the state-of-the-art in reforestation; Thunder Bay, Ontario, Canada; http://www.forestrenewal.ca/thingreenline

Aug 5-7 IUFRO meeting, Improving Productivity in Mixed-Species Plantations, Southern Cross University, Lismore, Australia; contact dnichols@scu.edu.au

*Aug 7-12 Ecological Society America annual meeting, Montreal, Canada; http://www.esa.org/montreal/

Aug 8-13 IUFRO World Congress, Brisbane, Australia. Stanturf to attend. http://www.iufro2005.com

*Aug 29-31 Status, Trends, and Future of the South's Forest and Agricultural Biomass conference, Athens, GA; http://biomass.sref.info/conference.htm

Sep 9-10 Pre-Conference Workshop in association with Pedometrics 2005 Conference, Gainesville, FL. http://conference.ifas.ufl.edu/pedometrics/#optional

Sep 10-12 European Forestry Institute annual conference and Scientific Seminar "Multifunctional Forest Ecosystem Management in Europe: Integrated approaches for considering the temporal, spatial and scientific dimensions" Centre Tecnològic Forestal de Catalunya (CTFC), Barcelona, Spain

Sep 12-14 Pedometrics 2005: Frontiers in Pedometrics, Naples, FL. http://conference.ifas.ufl.edu/pedometrics/

Sep 12-18 Society for Ecological Restoration 17th International Conference,Zaragoza, Spain. http://www.ecologicalrestoration.net

Sep 20-21 NOAA/EPA Golden Jubilee Symposium on Air Quality Modeling and Its Applications, Durham, NC.

*Sep 25-30 MEDPINE 3: International Conference on Conservation, Regeneration and Restoration of Mediterranean Pines and their Ecosystems, MAIB, Mediterranean Agronomic Institute of Bari - Valenzano (Bari), Italy. For further information contact: Angela Inchingolo or Elvira Loiudice (loiudice@iamb.it)

*Oct 9-13 2nd International Conference on Mechanisms of Organic Matter Stabilization and Destabilization in Soils, Asilomar California, http://wwwdata.forestry.oregonstate.edu/SoilConf

Oct 15-20 International conference on "Metal fluxes and their stress on terrestrial ecosystems," Centro Stefano Franscini, Monte Verità, Ascona, Switzerland; http://www.waldschutz.ch/bioindic/monte_verita/ [Abstracts due 1 May 2005]

Oct 17-19 23rd Tall Timbers Fire Ecology Conference "Fire In Grassland and Shrubland Ecosystems", Bartlesville, OK; http://www.talltimbers.org

Oct 19-23 Society American Foresters Annual Meeting, Ft. Worth, TX

Nov 6-10 Soil Science Society of American Annual Meeting, Salt Lake City, UT

Nov 7-11 IUFRO Tree Biotechnology 2005 Meeting, Pretoria, South Africa www.iufro.up.ac.za.

Nov 15-17 Fire in Eastern Oak Forests: Delivering Science to Managers, Ohio State University, Columbus, OH; contact Matt Dickinson mbdickinson@fs.fed.us

2006

*Jan 29-Feb 2 American Meteorological Society Annual Meeting, Atlanta, GA; http://www.ametsoc.org/meet/annual/

*Jan 8-12 "Ecology in an Era of Globalization: Challenges and Opportunities for Environmental Scientists in the Americas," Merida, Yucatan, Mexico; www.esa.org/mexico

*Feb/Mar Central Hardwood Forest Conference, Knoxville, TN.

*Apr 8-12 International Conference on Hydrology and Management of Forested Wetlands, New Bern, North Carolina; http://www.asae.org/imis/meeting/forestcall.cfm

Jul 9-15 18th World Congress of Soil Science, in Philadelphia, PA http://www.18wcss.org

Oct 25-29 Society American Foresters Annual Meeting, Pittsburgh, PA

*Nov 12-16 Soil Science Society of American Annual Meeting, Indianapolis, IN; http://www.indy.org

*Nov 27 to 30 V International Conference on Forest Fire Research, Coimbra, Portugal http://www.fire.uni-freiburg.de/course/meeting/meet2004_25.htm

2007

*Feb/Mar 14th Biennial Southern Silvicultural Research Conference, Charleston, SC or Savannah, GA;

*Nov 4-8 Soil Science Society of American Annual Meeting, New Orleans,

Brian Lockhart, Research Forester Stoneville, was our mystery photo. Brian was judging Student Papers at the Silviculture Conference in Memphis

Who is the local that showed up at the Management Team field trip to the Francis Marion National Forest?

(Photo: Julie Arnold)

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GPRA -Accomplishment

Category	FY 2004 Total	FY 2005 Total
Number of Refereed Journal Publications	20	17
Number of Non-Refereed Publications (include abstracts)	89	23
Number of Publications (refereed + non-refereed)	109	40
Number of Tours	41	23
Number of Short Courses/Training	20	8
Number of Invited Presentations to Scientific Organizations	12	3
Number of Invited Presentation to Lay Organizations	30	18
Volunteer Presentations to Scientific Organizations (non-GPRA	42	29
Number of Technology Transfer Activities (other than above)	105	93
Outside Funding	$2,610,574	$2,925,469

SRS-4104 Project Leader's Report

John Stanturf - Editor Lynne Breland - Technical Writer
Patricia A. Outcalt - Production, Design and Layout

DISTURBANCE AND MANAGEMENT OF SOUTHERN ECOSYSTEMS